

WHAT IS CLAIMED IS:

1. A handheld computing device comprising:

a screen capable of displaying mathematical expressions;
a key panel having keys operating the calculator and entering user responses;
a processor for executing programming that provides a user interface to assist the user in learning to solve a mathematical symbolic calculation problem,
and expert programming which provides a set of transformations for a mathematical object that the user can choose from and apply to the mathematical object to produce the next step in a solution to the problem.

2. The handheld computing device of Claim 1, wherein said processor is further programmed to allow transformations of the mathematical object that are valid mathematically but do not lead to the solution of the problem.

3. The handheld computing device of Claim 2, wherein said processor is further programmed to pause after the user selects the transformation before applying the transformation to the problem.

4. The handheld computing device of Claim 3, wherein said processor is further programmed to clean-up the result of a previous transformation in response to the user pressing a key, where clean-up consists of arithmetic and other basic simplification appropriate for the problem.

5. The handheld computing device of Claim 1, wherein said processor is further programmed to clean-up the result of a previous transformation in response to the user pressing a key, where clean-up consists of arithmetic and other basic simplification appropriate for the problem.

6. The handheld computing device of Claim 1, wherein said processor is further programmed to provide a set transformation tools for a mathematical sub-object that the user can choose from and apply to the mathematical sub-object in a selection box to produce the next step in a solution to the problem.

7. A graphing calculator comprising:

a screen capable of displaying mathematical expressions;

a key panel having keys operating the calculator and entering user responses;

a processor for executing programming that provides a user interface to assist the user in learning to solve a mathematical symbolic calculation problem,

and expert programming which provides a set of transformations for a mathematical object that the user can choose from and apply to the mathematical object to produce the next step in a solution to the problem.

8. The handheld computing device of Claim 7, wherein said processor is further programmed to allow transformations of the mathematical object that are valid mathematically but do not lead to the solution of the problem.

9. The handheld computing device of Claim 8, wherein said processor is further programmed to pause after the user selects the transformation before applying the transformation to the problem.

10. The handheld computing device of Claim 9, wherein said processor is further programmed to clean-up the result of a previous transformation in response to the user pressing a key, where clean-up consists of arithmetic and other basic simplification appropriate for the problem.

11. The handheld computing device of Claim 7, wherein said processor is further programmed to clean-up the result of a previous transformation in response to the user

pressing a key, where clean-up consists of arithmetic and other basic simplification appropriate for the problem.

12. The handheld computing device of Claim 7, wherein said processor is further programmed to provide a set transformation tools for a mathematical sub-object that the user can choose from and apply to the mathematical sub-object in a selection box to produce the next step in a solution to the problem.

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